

CLIMATE & ECONOMIC DEVELOPMENT PROJECT SOUTHERN CALIFORNIA



DRAFT Southern California Association of Governments Energy, Resource and Commerce Catalog Greenhouse Gas Reduction Policy Options

This catalog of Residential, Commercial and Industrial regional-level greenhouse gas (GHG) reducing actions and policy options prepared by the Center for Climate Strategies (CCS) is based on actions undertaken or considered in state- and region-wide climate change action plans by multi-stakeholder groups in a wide cross-section of U.S. states and by state, local and private participants. The Energy, Commerce and Resources (ECR) Technical Work Group will add to this Catalog in the initial phase of the Climate and Economic Development Project.

Sector 1 of 4: Residential, Commercial, and Industrial Energy Use

Table	Sector Covered
1	Residential, Commercial, Industrial (RCI)

Key to Rankings* of Options in the Table that Follows:

Potential GHG Emission Reductions ^{1/}	Potential Cost or Cost Savings ^{1, 2}
High (H): At least 1.0 million metric tons (MMt) carbon dioxide equivalent (CO ₂ e) per year by 2025	High (H): \$50 per metric ton CO ₂ e (tCO ₂ e) or above
Medium (M): From 0.1 to 1.0 MMtCO ₂ e per year by 2025	Medium (M): \$5 to 50/tCO ₂ e
Low (L): Less than 0.1 MMtCO ₂ e per year by 2025, or 1 MMtCO ₂ e by 2050	Low (L): Less than \$5/tCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
1 Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
2 Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

The GHG reductions or cost/cost savings of some policy options are not quantified (NQ) due to lack of data or for other reasons.

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

Important Note: The actions are numbered in this catalog solely for convenience in referencing them. Their numbers do NOT reflect a ranking or prioritization of the actions.

*To be completed as part of the on-going process

Table-1 Residential, Commercial, and Industrial (RCI)

This catalog will be developed more fully during the ECR TWG process. TWG members are encouraged to provide input on policies and programs in place in Southern California to assist in defining baselines. The “Notes” column may be used to record recently enacted policies and programs in California relevant to policy options and management actions in the catalog.

(Note: Some RCI policies overlap with or are repeated in Table 2-Energy Supply.)

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
RCI-1	ENERGY EFFICIENCY PROGRAMS, FUNDS, AND GOALS					
1.1	Utility Demand Side Management (DSM) Programs for electricity					
1.2	Utility Demand Side Management (DSM) Programs for natural gas, propane, and fuel oil					
1.3	Non-utility Demand Side Management (DSM) Programs for Electricity (munis, co-ops, etc.)					
1.4	Energy Efficiency Funds (e.g. Public Benefit Funds) Administered by Local Agency, Utility, or Third Party (e.g. Energy Trust)					Emphasize low-interest lending (recommended by TWG member)
1.5	Regional Market Transformation Alliances, Technology Development Programs and Education			Includes research and development		
1.6	Reduced Cost or Free Residential Energy Audits					
1.7	Reduced-Cost Energy Audits or Technical Assistance for Commercial Businesses					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
1.8	Reduced-Cost Energy Audits or Technical Assistance for Industry Sectors					
1.9	Low-cost Loans for Energy Efficiency Improvements			Loan programs' success depends heavily on programs design		
1.10	Saving Energy, Savings Sales Tax			Sales tax holidays often shift sales from one period to another		
1.11	Reduce Energy Use by 10% or More in Government-Owned Buildings					
1.12	Encourage Integrated Lean Manufacturing and Energy Use Reduction through Technical Assistance to Industrial and Commercial Facilities					
1.13	Develop Investment Tax Credits for Energy Efficiency Improvements in Industrial or Commercial Facilities					
1.14	Inverted Block Rates to Fund Energy Efficiency			Pair with efficiency program or smart meters		
1.15	Require Energy Audit on Sale of Property					Recommended by TWG member
1.16	PACE (Property Assessed Clean Energy - financing) for Energy Efficiency and Renewables					Recommended by TWG member
1.17	On-bill Financing of Energy Efficiency Upgrades					Recommended by TWG member

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
RCI-2	BUILDINGS AND FACILITIES					
2.1	Improved Building Codes for Energy Efficiency			New buildings or substantial retrofits (can include 'Beyond Code' incentives or requirements)		
2.2	Training of Building Code and Other Officials in Energy Code Enforcement			High value; best building codes include training elements		
2.3	Improved Design and Construction, "Government Lead by Example"			Impact depends on amount of government building construction		
2.4	Increased Use of Blended Cement (substituting fly ash or other pozzolans for clinker reduces CO ₂ emissions)					
2.5	Support for energy efficient communities planning, "smart growth"					
2.6	Promotion and Incentives for Improved Design and Construction (e.g. LEED ⁴ , green buildings)					
2.7	Feebate Program to Encourage Energy Efficiency in Building Design					
2.8	Incentives for Retrofit of Existing Residential Commercial, Institutional and Industrial Buildings					
2.9	Training and Education for Builders and Contractors (e.g. heating, ventilation, air conditioning, sizing, duct sealing)					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
2.10	Energy Management Training/Training of Building Operators					
2.11	Energy Efficiency in Government Buildings			Construction and equipment		
2.12	Require New Government Buildings to Meet LEED Gold Certification or Equivalent					
2.13	Create Incentives and Targets for Retrofit of Existing Commercial or Industrial Buildings					
2.14	Develop a Modified Cap & Trade Program for Commercial Buildings					
2.15	Building Commissioning and Re-commissioning, including Energy Tracking and Benchmarking					
2.16	Explore Advanced Metering Technologies to Monitor Energy Usage and Allow Homeowners and Managers to Adjust Energy Use Remotely			Metering can be expensive; remote power controls may not be critical		
2.17	Require Solar-Ready Building Infrastructure and Require Solar Hot Water Systems in New Buildings					
RCI-3	APPLIANCE STANDARDS					
3.1	Expansion of State-level Appliance Efficiency Standards					
3.2	Support for Higher Federal Efficiency Standards					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
3.3	Require High-Efficiency Appliances in New Construction and Retrofits					
RCI-4	EDUCATION AND OUTREACH					
4.1	Consumer Education Programs			Extend to retailers, businesses, students and teachers		
4.2	Energy Efficiency School Curriculum					
4.3	Truth in Advertising Campaign					
4.4	In-home Energy Displays					
4.5	Create a High-Tech Research and Development Center that Focuses on Renewable Energy and Energy Efficiency					
4.6	Information and Technical Support for Broad Spectrum of Climate Change Actions					
RCI-5	PRICING AND PURCHASING					
5.1	Green Power Purchasing for Consumers					
5.2	Net-metering for Distributed Generation					
5.3	Time of Use Rates			Seasonal use rates		
5.4	Inverted Block Rates to Fund Energy Efficiency			Also improves efficiency. See 1.14		
5.5	Bulk Purchasing Programs for Energy Efficiency or other Equipment (Public or Private sector)					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
5.6	Incentive and research for conversion to low-carbon and renewable energy sources					
RCI-6	CUSTOMER-SITED DISTRIBUTED ENERGY AND COMBINED HEAT AND POWER					
6.1	Incentives for Renewable Energy Systems at Residential, Commercial and Industrial Sites					
6.2	Incentives and Resources to Promote Combined Heat and Power (cogeneration units)					
6.3	Efficient Transformers on the Customer Side of the Meter					
6.4	Incentives and Resources for Passive Solar Heating					
6.5	White Roofs, Rooftop Gardens, and Landscaping (including Shade Tree Programs)					
6.6	Focus on Specific End-uses Consumer Products/ Technology					
6.7	Passive Solar Heating design					
6.8	Passive Solar Hot Water					
6.9	Appliance Recycling/Pick-Up Programs					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
6.10	Metering Technologies for Load Management and Choice					
RCI-7	NON-ENERGY EMISSIONS (HFCS, PFCS, SF₆, CO₂ PROCESS EMISSIONS)					
7.1	Voluntary Industry-Government Partnerships					
7.2	Promotion and Funding for Leak Reduction /Capture, Recovery and Recycling of Process Gases					
7.3	Promotion & funding for Process Changes/ Optimization					
7.4	Use of Alternative Gases (other HFCs, hydrocarbon coolants/refrigerants, etc.)					
RCI-8	GREENHOUSE GAS EMISSIONS-SPECIFIC GOALS AND POLICIES					
8.1	Support for Switching to Less Carbon-Intensive Fuels (Coal and Oil to Natural Gas or Biomass)					
8.2	Industry-Specific Emissions Cap-and-Trade Program					
8.3	Negotiated Emissions or Energy Savings Agreements					
8.4	Local Government Program for Voluntary Emission Targets by Businesses					
8.5	Provide Tools and Information for Residents, Businesses, and Communities to Perform GHG Inventories					

Option No.	GHG Reduction Policy Option	Potential GHG Emissions Reductions	Cost per Ton	Externalities, Feasibility Considerations	Priority for Analysis	Notes / Related Actions in Southern California
8.6	Carbon Tax					
RCI-9	OTHER					
9.1	Government Agency Requirements and Goals (including procurement)					
9.3	Municipal Energy Mgt.					
9.2	Carbon Neutral Building Requirement					
9.4	Regional Effort to Retrofit Existing Buildings (residential, commercial, public, and industrial) for Energy Efficiency					
9.5	Focus Energy Efficiency Efforts on Specific Market Segments (e.g. low-income housing, small & medium enterprises, etc.)					
9.6	Energy Efficiency Reinvestment Funds					
9.7	Industrial Audits					
9.8	Focus on Industrial Ecology/ By-product Synergy					
9.10	Promote Virtual Net-Metering for Campuses, Municipalities and Businesses					Recommended by TWG member